

INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

India : Plant Diseases observed in Burma (1).

Recently recorded diseases on economic plants are *Ramularia areola* Atk. on *Gossypium neglectum*, *Spachelotheca cruenta* (Kühn) Potter on *Sorghum vulgare*, and *Thielaviopsis paradoxa* (de Seyn) v. Höhn. causing a bud rot of coconuts. None of these diseases is serious at present.

A mosaic disease of chillies (*Capsicum annuum*) has been found to be widespread in Upper Burma. The disease is characterised by curling and crinkling of the leaves and uneven colouring. Affected plants are stunted and produce few berries. Losses in some places are estimated at about 25 % of the crop.

A foot-rot disease of seedling beans (*Phaseolus lunatus*) caused by *Sclerotium Rolfsii* Sacc. has been common on riverine soils.

India : Notes on Diseases in the Bombay Presidency (2).

1. *Sclerotium rolfsii* has been recorded this year for the first time on tobacco in the Bombay Presidency. The disease was serious in a plot of tobacco grown at the Agricultural Farm, Manjri, near Poona.

2. *Sclerospora graminicola* is the cause of a very serious disease of *Pennisetum typhoideum*, known as the green ear disease or downy mildew. It is generally believed that the disease is carried over by the oospores, but it has not been possible to germinate them artificially and cause infection of the host. However, the work done recently at the College of Agriculture, Poona, has shown that, under certain conditions, the plants can be artificially infected by the germinating oospores of *Sclerospora graminicola*. Similarly, *Andropogon sorghum* has been infected with the oospores of *Sclerospora graminicola* var. *Andropogonis-sorgi*; but all attempts to infect *Pennisetum typhoideum* with these oospores have failed, nor has it been possible to infect *Andropogon sorghum* with the oospores of *Sclerospora graminicola* collected on *Pennisetum typhoideum* or on *Setaria viridis*.

Italy : Phytopathological Notes (3).

According to information collected by the Royal Station of Plant Pathology in Rome no cryptogamic diseases or plant pests worthy of mention have been recorded since the beginning of 1929.

* In this, as in the following chapter, the countries are arranged in the French alphabetical order.

(1) Communication from the official correspondent to the Institute, Mr D. RHIND, I. A. S., Economic Botanist, Burma, Mandalay.

(2) Communication from the official correspondent to the Institute, Dr. B. N. UPPAL, Plant Pathologist to the Government, Bombay Presidency, Poona.

(3) Communication from the Royal Station of Plant Pathology in Rome, official correspondent of the Institute.

Some cases which occurred during 1928 may more profitably be considered.

Most important were the disastrous effects of the intense cold during part of December, 1927 on the olive trees of nearly the whole of the Mediterranean region; these effects have become apparent since the spring of 1928 and continue to cause alarm to olive growers because cankers and extensive cracks in the bark of the trunk, main branches and superficial roots have caused in some cases a gradual drying up of the foliage or of the entire tree and in others have considerably favoured the development of "bacterial tumours" ("rognà" or "tubercolosi", *Bacterium Savastanoi* Smith).

The hail of the spring of 1928 still further extended the infection. The exceptional cold of January and February, 1929, aggravated the unfavourable conditions of olive trees near the limits of olive cultivation both in altitude and latitude.

An exceptionally severe and extensive attack of *Capnodis tenebrionis* L. must be reported which caused much damage in the orchards of Latium, not sparing even the best situated trees.

A severe infection of *Gloeosporium Cyclaminis* Sib. ("antracnosi del peduncolo," anthracnose of the peduncle of cyclamen) occurred on ornamental plants under glass.

Latvia: Plant Diseases observed in 1928 (I).

Meteorological conditions, in consequence of the exceptionally low temperatures and heavy rainfall, have been particularly unfavourable to the development of plants during 1928.

On fruit trees and bushes serious attacks have been reported of *Venturia inaequalis* (Cooke) Aderh., *V. pirina* Aderh., *Taphrina Pruni* (Fuckl.) Tul. and *Puccinia Ribesii-Caricis* Kleb.

Colletotrichum Lini (Westerdijk) Tochinai has caused serious damage to young flax plants; *Phoma exigua* Desm. and *Ascochyta linicola* Naumow and Wassiliewski have caused withering of the stems of flax with disastrous results.

Forest nurseries and young pine plantations have been seriously damaged by *Thelephora laciniata* Pers. and by *Melampsora pinitorqua* Rostr.

The following parasites are newly recorded for the flora of Latvia:—

Peronospora sparsa Berk., on *Rosa* sp. cult. (under glass);

Phoma exigua, *Ascochyta linicola* and *Colletotrichum Lini*, species already mentioned, on *Linum usitatissimum*;

Oidium Hortensiae Forst., on *Hydrangea Hortensia* (under glass);

O. Fragariae Harz, on *Fragaria* sp. cult.;

Trichothecium roseum Link, on *Araucaria* sp. (under glass);

Botrytis Paeoniae Oudem., on *Paeonia* sp. (in gardens);

Pseudomonas Syringae Beijer., on *Syringa vulgaris* (also in gardens).

In connection with plant protection it should be remarked that prophylactic treatment of flax seed has given good results in field experiments. In 1927 an increase of 28.1 % in the crop was obtained by a dry treatment with "Abavit B"; dry treatment with "M C III" (of the "Saccharinfabrik A. G.", Magdebourg), "Segetan", "Cuprum carbonicum" and "Heyden" also gave satisfactory results. In 1928 "Germisan" was the only effective treatment and gave an increased production of 21 %. Although certain preparations used for dry treatment in 1928 gave satisfac-

(1) Communication from the official correspondent to the Institute, Prof. Max ECLITS, Director of the Institute of Plant Protection at Riga.

tory increase in production their beneficial effect could not be conclusively proved owing to the variable results obtained in the experimental plots, which should however probably be attributed to the unfavourable influence of the heavy rains which occurred shortly after sowing the treated seeds.

Switzerland : Wart Disease of Potato in 1928 (1).

In 1928 there was an outbreak of potato wart disease (*Synchytrium endobioticum*) in a field at Meggen, Canton of Lucerne, in German Switzerland. The infected variety was the same which was grown in the field in 1925 and caused a serious outbreak of the disease at that time. The disease which was already present in a latent state and had not been reported caused a reinfection of the 1928 crop.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Western Australia. — By Order in Council the following regulations have been passed : —

(1) Fruit Fly (*Ceratitis capitata*) is hereby declared to be a disease to which the provisions of Section 8A of "The Plant Diseases Act, 1914-1926", shall apply.

(2) In every orchard containing from one tree to two hundred trees inclusive where fruit fly exists the occupier shall do or cause to be done the following things, namely :—

(a) gather all fallen fruits from the ground at least once in every 24 hours ;
(b) gather all fruits infested with larvae of fruit fly from the ground and trees at least once in every 24 hours and destroy the same by boiling ; (c) place in each tree fruit fly lure contained in two suitable containers, and made in accordance with the formula prescribed in Regulation (3), and empty and refill all containers with fresh fruit fly lure at least once in every seven days during such time as the fruits in the orchard are in such a state of growth and ripeness as may enable fruit fly to use the same as a depository for eggs.

(3) The formula for making fruit fly lure for use as provided by Regulation 2 (c) is as follows :— Pollard, 8 ozs. ; powdered borax, 8 ozs. ; arsenate of soda (poison), $\frac{1}{4}$ oz. ; water, 1 gallon. The ingredients must be steeped for 12 hours and the amber liquid then drawn off and used in the manner prescribed.

(4) In every orchard containing more than two hundred trees where fruit fly exists the occupier shall comply with all the provisions of Regulation (2), save and except that, instead of complying with the provisions of paragraph (c) of the said Regulation, he may apply or cause to be applied to the trees having fruits thereon with a hand syringe or small spray pump fruit fly bait made in accordance with the formula prescribed in Regulation (5), using not less than one gallon of bait to every eighty trees at least once in every seven days, during such time as the fruits are in

(1) Communication from the official correspondent to the Institute, Dr. E. NEUWEILER, Schweizerische Landwirtschaftliche Versuchsanstalt in Oerlikon-Zürich.

such a state of growth and ripeness as may enable fruit fly to use the same as a depository for eggs.

(5) The formula for making fruit fly bait for use as provided in Regulation (4) is as follows:— Powdered arsenate of lead, 2 ½ ozs.; molasses, 4 lbs.; fruit syrup (preferably orange), 1 gallon; water, 3 gallons.

(6) Any person committing a breach of any of these regulations shall on conviction be liable to a penalty not exceeding twenty-five pounds. (*Government Gazette of Western Australia*, Perth, September 14, 1928, No. 44, p. 2059).

*** A notice from the Director of Agriculture, dated 16 January, 1929, states that "Paterson's Curse", (*Echium plantagineum*) has been declared a noxious weed in the Preston Road Board District. (*Government Gazette of Western Australia*, Perth, January 18, 1929, No. 4, p. 80).

Austria (1). — In order to prevent the introduction of the Colorado beetle ("Coloradokäfer", *Leptinotarsa decemlineata*) a Decree of the Federal Minister of Finance, dated 26 January, 1929 (*B. G. Bl. Nr. 56*), which came into force on 15 February, prohibits the importation and transit of potatoes in the fresh state, of tomatoes and aubergines, also of the remains or packings of such tubers and fruits coming from continental France.

Brazil (State of São Paulo). — With the object of controlling the coffee berry borer ("broca do café", *Stephanoderes hampei*, Ferr.) and in virtue of the State Law No. 2,888 of 1 October, 1928 coffee may not be raised by owners of coffee plantations in the Municipalities infested with the borer who have not complied with the "repassé" of the plantations (*i. e.* the careful collection and removal of any fruit remaining on the plant or on the ground after the harvesting of the ordinary crop) or who have not disinfected their coffee crops or taken the other precautions prescribed by the Inspection Service of the "Instituto Biologico de Defesa Agricola e Animal".

The transport of coffee will be allowed only by authorisation of the Inspection Service. (*Revista da Sociedade Rural Brasileira*, São Paulo, 1928, anno VIII, n. 101, pag. 295).

Cuba. — By Presidential Decree No. 1551 of 17 September, 1928, Decree No. 1260 of 10 September, 1924, prohibiting the importation of fruits and certain plants in order to prevent the introduction into the island of agricultural pests and diseases, is in the following terms:—

(1) Prohibition is absolute for the importation into Cuba of fruits, market garden products, seeds, plants or living plant parts coming from Porto Rico, Jamaica, Bermuda, Mexico, Central and South America, the Hawaii Islands, Australia, the Philippines, Spain, France, Italy and other Mediterranean countries, as also from all tropical and sub-tropical countries between the latitudes of 40°N and 40°S, with the provisional exception of potatoes coming from the Canary Islands and fruit and other plant products coming from the United States of America and not included in former quarantine orders, which shall be thoroughly examined by officials of the "Departamento de Sanidad Vegetal" at the various ports of the islands.

(2) From this prohibition are exempted cleaned seeds of market garden plants

(1) Communication from the Bundesministerium für Land-u. Forstwirtschaft, Vienna.

not included in any other quarantine order, and which shall be inspected as required under the Sanitary Laws of Cuba; as also plants, fruits, etc., addressed to the Agricultural Experiment Station. In this last case the Director of the Station shall take the precautions necessary to protect the country against possible infection.

(3) Any modification of this quarantine shall be the subject of a Decree of the Minister of Agriculture, Trade and Labour on the recommendation of the Head of the "Servicio de Sanidad Vegetal".

(4) Any infringement of the present Decree will be punishable by a fine of from one to one hundred pesos with the unconditional confiscation of the products, seeds or plants for purposes of immediate destruction, no appeal on the part of the persons concerned being admissible. (*Revista de Agricultura, Comercio y Trabajo, Órgano oficial*, Habana, Cuba, 1928, año XI, vol. 10, núm. 4, pág. 47).

Spain. — By Royal Ordinance No. 64 of 20 November, 1928 regulations have been laid down relating to the time for the treatment of grounds in which locust eggs are deposited. (*Gaceta de Madrid*, Madrid, 30 noviembre 1928, año CCLXVII, tomo IV, núm. 335, págs. 1357 y 1358).

****** By Royal Decree No. 422 of 4 February, 1929, the powers hitherto assigned to the "Consejos provinciales de Fomento" by the law of 21 May, 1908 prescribing measures for the control of plant diseases and pests and subsequent legislation on the same question have been transferred to the provincial "Cámaras Oficiales Agrícolas". Similarly the powers regarding plant diseases and pests hitherto vested in the "Jefes provinciales de Fomento" have been transferred to the Presidents of the above-named Chambers. Detailed instructions for giving effect to these measures are annexed to the Decree. (*Gaceta de Madrid*, Madrid, 5 febrero 1929, año CCLXVIII, tomo I, núm. 36, págs. 1041 a 1046).

United States of America. — By Resolution approved 21 May, 1928 when any State shall have taken measures, including the establishment of non-cotton zones, to eradicate the pink bollworm [*Platyedra gossypiella*] the Secretary of Agriculture is authorised to expend \$5,000,000 for the compensation of farmers for any loss occasioned by the enforced non-production of cotton within the said zones. ([*Public Resolution — No. 47—70th Congress*]. [S. J. Res. 129]. *Joint Resolution To provide for eradication of pink bollworm and authorizing an appropriation therefor*, 2 pp.).

****** By Act approved 24 May, 1928 the Secretary of Agriculture has been authorised to the expenditure of \$7,000,000 for the eradication or control of the European corn borer [*Pyrausta nubilalis*]. ([*Public No. 505—70th Congress*]. [H. R. 12632]. *An Act To provide for the eradication or control of the European corn borer*, 1 p.).

France. — By Ministerial Decree of 29 November, 1928, a Commission has been formed by the "Direction Générale des Eaux et Forêts" of the Ministry of Agriculture for the investigation of the diseases and pests of trees, timber and wood-work.

The Commission has the following purposes:—(1) to co-ordinate all information already gained about the insect and fungoid pests of trees and timber; (2) to instigate or carry out any useful research on new diseases and pests of trees and tim-

ber which are reported; (3) to discover means of controlling such insect and fungoid pests.

The Commission is divided into two Sections, one to deal with diseases and malformations caused by cryptogamic organisms and one to deal with those caused by insects. (*Journal officiel de la République Française*, Paris, 4 décembre 1928, 60^{me} année, n° 286, p. 12675-12676).

* * By the Law of 6 December, 1928 relating to the regulation of the felling of chestnut trees, any owner or grower desiring to fell more than 20 such trees a year is required to make a written notification to that effect to the Prefect of the Department at least one month before the date arranged for the felling of the trees.

The notification shall include a statement about whether the "maladie de l'encre" ("ink disease" [*Blepharospora cambivora*]) is present in the plantation.

Owners or growers in whose chestnut plantations the "ink disease" is found to be present shall conform to the requirements of the Service responsible for the control of the disease. (*Journal officiel de la République Française*, Paris, 27 décembre 1928, 60^{me} année, n° 305, p. 13430).

Italy. -- By Law No. 2690 of 18 November, 1928 has been converted into Law the Royal Decree-Law No. 1754 of 12 August, 1927, which lays down regulations for increasing olive growing. The regulations provide also for the control of the diseases and pests of the olive tree. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 15 dicembre 1928, anno 69°, n. 291, p. 6075).

* * By law No. 2902 of 29 November, 1928, the Royal Decree-Law, No. 310 of 26 February, 1928, which allows exemption from customs duty to imported cyanides of potassium, sodium and calcium and to substances impregnated with hydrocyanic acid when intended for agricultural use, has been made law. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 4 gennaio 1929, anno 70°, n. 3, p. 49).

* * The Ministerial Decree of 18 April, 1928 fixing the special technical rules to be observed in the exportation of citrus fruits has been repealed and replaced by the Ministerial Decree of 1 December, 1928. The latter enacts *inter alia* that lemons and oranges for export must be considered for commercial purposes free from scale insects. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 19 dicembre 1928, anno 69°, n. 294, pp. 6131-6140, figg.).

* * The Royal Decree No. 3433 of 6 December, 1928 which deals with the organization and work of the "Cattedre ambulanti d'Agricoltura", declares, *inter alia*, that they shall be required to assist in the control of plant diseases and pests. (See this *Bulletin*, 1929, No. 2, pp. 22-28). (*Gazzetta ufficiale del Regno d'Italia*, Roma, 28 febbraio 1929, anno 70°, n. 50, p. 947).

* * The presence of grape phylloxera [*Phylloxera vastatrix*] having been ascertained the following Communes have been declared infected:—

(1) Pettorazza, in the province of Rovigo (Ministerial Decree of 15 December, 1928);

(2) Civita Campomarano, Rocavivara, in the province of Campobasso (Ministerial Decree of 15 January, 1929);

(3) San Benedetto Po, Suzzara, in the province of Mantova (Ministerial Decree of 18 February, 1929). (1) *Gazzetta ufficiale del Regno d'Italia*, Roma, 19 di-

cembre 1928, anno 69^o, n. 294, p. 6144; (2) *Ibid.*, 19 gennaio 1929, anno 70^o, n. 16, p. 323; (3) *Ibid.*, 1^o marzo 1929, n. 51, p. 975).

** By Law No. 48 of 3 January, 1929 the Royal Decree-Law No. 1825, of 3 August, 1928 (see this *Bulletin*, 1929, No. 1, p. 10) which allows freedom from customs duty to mineral oil residues for use in the manufacture of substances for the control of fruit pests, has been converted into law. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 15 febbraio 1929, anno 70^o, n. 39, p. 747).

** The Ministry of National Economy has published a list of the Communes (following the administrative districts) which were declared infected or suspected of infection by grape phylloxera on 31 December, 1928; in accordance with Regulation No. 1099 of 13 June, 1918 and Royal Decree No. 1751 of 14 November, 1920 the exportation of certain plant materials from these Communes is prohibited. (MINISTERO DELL'ECONOMIA NAZIONALE. *Bollettino ufficiale. Legislazione e disposizioni ufficiali*, Roma, 1928, anno 6^o, n. 23, pp. 1985-2011).

** A compulsory "Consorzio" (Association) has been formed among the olive growers of the province of Catania. The annual contribution for members is not greater than L. 0.10 per fruiting tree. The functions of the "Consorzio" include the choice and application of effective methods of control of the diseases and pests of the olive tree.

** A "Consorzio obbligatorio" (compulsory Association) for the control of the diseases and pests of fruit trees has been established at Cividale, province of Udine. It includes all the communes in the valley of Natisone and is appointed for a period of nine years.

** Control of Field-Voles has been made compulsory throughout the Capitanata. In every Commune of the province of Foggia a "Consorzio obbligatorio" will be responsible for this control and the work of the communal "Consorzi" will be coordinated on the technical and administrative sides by a provincial "Consorzio".

Mauritius. — By Ordinance No. 21 of 1928, dated 22 September, 1928, all penalties incurred under the Plants Diseases Prevention Ordinance, 1911, may be sued for and recovered at the instance of the Director of Agriculture or of any officer of his Department delegated by him. This Ordinance may be cited as the Plants Diseases Prevention (Amendment) Ordinance, 1928. (*The Government Gazette of the Island of Mauritius*, Port Louis, 22 September, 1928, No. 68, p. 443).

Mexico. — In order to prevent the introduction of the flag smut of wheat ("tizón del trigo", *Urocystis Tritici* Koern.), a Presidential Decree of 13 September, 1928 established the "Cuarantena exterior núm. 8". This quarantine order came into force on 30 October, 1928 and strictly prohibits the importation of any species or variety of wheat from India, Japan, China, Australia, South Africa, Italy, Spain and certain of the United States of America (Illinois, Kansas and Missouri).

The importation of such wheat may be authorised by special permit only if intended for scientific use or study and on condition that the precautions laid down by the "Secretaría de Agricultura y Fomento" through the "Oficina Federal para la Defensa Agrícola" have been observed.

Wheat coming from regions other than those specified above is subjected to a partial quarantine. Before importation is permitted it must have been fumigated with carbon bisulphide at a strength of 100 gm. per cubic metre, or have received some other treatment approved by the "Oficina".

The "Secretaría", through the intermediary of the "Oficina", may accept certificates of fumigation issued by foreign countries with which there is commercial exchange of agricultural products, provided that the products have received fumigation with the required substance and at the required strength and that the certificates have been endorsed by the Mexican Consuls.

The importation of wheat submitted to partial quarantine may be permitted by the following ports and frontier stations:—

on the northern frontier: Zaragoza, B. C.; Mexicali, B. C.; Nogales, Son.; Naco, Son.; Agua Prieta, Son.; Ciudad Juárez, Chih.; Villa Acuña, Coah.; Piedras Negras, Coah.; Nuevo Laredo, Tamps.; Matamoros, Tamps.;

on the coast of the Gulf of Mexico: Tampico, Tamps.; Veracruz, Ver.; Progreso, Yuc.;

on the southern frontier: Mazatlán, Sin.; Manzanillo, Col.; Acapulco, Gro.;

on the Gulf of California: Santa Rosalia, B. C.; La Paz, B. C. (*Diario Oficial*, México, 30 de octubre de 1928, tomo L, núm. 49, págs. 1 y 2).

Sweden. — Decree No. 337 of 6 September, 1928, which came into force on the 12th of that month, specifies some of the regulations to be adopted in the control of wart disease ("potatiskräfta" [*Synchytrium endobioticum*]) of the potato: — compulsory reporting of the disease; verification of reported cases by the competent officials; methods of disinfection to be used; prohibition of the transport of diseased tubers, etc. (*Svensk Författningssamling*, Stockholm, 11 september 1928, Nr 337 och 338, p. 971-972).

Syria (State of) (1). — By virtue of the Decree of the President of the Council, of the Ministry of the State of Syria, dated 31 December, 1928, approved by the High Commissioner for France on 8 January, 1929, the Director of Agriculture and Economic Improvements is made responsible, under the Ministry of Agriculture and Commerce, for the organisation and direction of the control of insect and other crop pests in the State. On his own responsibility and with the consent of the Ministry he may depute the direction of the control measures to other officials in the various administrative districts of the State.

Only in exceptional cases, such as the ploughing up of cultivated ground for the control of locusts or the burning of crops for the control of the "souné" [*Eurygaster integriceps*], will compensation be payable for damage entailed in the carrying out of control measures against insect and other pests.

All farmers in the area infected or suspected of infection and, if necessary, those of the neighbouring districts, are required to assist in the control personally and by means of their labour, machinery and animals.

The Director of Agriculture and Economic Improvements and the expert inspectors deputed to the charge of the control operations may, when necessary, requisition labourers, animals and material from owners and persons other than farmers in the infected or suspected area for the protection of the crops.

(1) Communication from the official correspondent to the Institute, Mr Raphaël HALLAGE, Inspecteur des Epiphyties (Commission Consultative des Epiphyties, Haut Commissariat de la République Française en Syrie et au Liban), Damascus.

The administrative authorities, police force and excise officers of the infected or suspected area or of the neighbouring districts are required, as far as is compatible with the discharge of their duties, to assist in the protection of crops on the demand of the Director or his deputies and in particular to see that the regulations are carried out.

The material for the control operations will be provided, within the limits of available stock, by the Department of Agriculture and Economic Improvements to the officials in charge of the protection of crops.

The Decrees and Regulations No. 128 of 22 May 1925, No. 533 of 12 December 1925 and No. 445 of 26 October 1926 are hereby abrogated.

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E. nigra, *E. pulchripes*, *Anomala obsoleta*, *A. anchoralis*, *A. aerea*, *Brahmina pumila*, *Lepadoretus compressus*, *Adoretus sciurinus*, *Holotrichia helleri*, *H. leucophthalma*, *Po-pillia biguttata*, *Serica* sp., on *Manihot utilisima*; *Heliothis obsoleta*, *Pyrausta salen-tialis*, on maize; *Ceratitis capitata*, *Rioxa musae* and various unidentified scale insects, on *Citrus*; *Bactrocera cucurbitae*, on the Cucurbitaceae; *B. ferruginea*, on *Mangifera indica* and *Capsicum annuum*; *B. caudata*; *Dacus garciniae*, on *Garcinia dulcis*; *D. umbrosus*, on *Artocarpus integrifolia*.

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[*Casca occidentalis* Silvestri et Mercet n. sp., probably a parasite of *Hemiberlesia minima* on *Quercus Ilex*, at Portici, Italy, taken on the branches of *Quercus* at Santander, Spain; *Aspidiotiphagus lounsburyi* Berlese et Paoli, parasite of *Aspidiotus maderensis*, on *Dracena Draco*, in the island of Teneriffe; *A. citrinus* Craw., from *Diaspis calyptroides* on *Opuntia glaucophylla* at Madrid, from *D. zamiae* on *Strelitzia augusta*, from *Aspidiotus hederae* on *Acacia cyanophylla*, and from *Chrysomphalus dictyospermi* on *Citrus* at Algiers; *Prospaltella leucaspidis* Mercet bred from *Leucaspis pusilla* on *Pinus halepensis* at Algiers; *Encarsia longicornis* on *Quercus* spp.: biological behaviour unknown; *Aphytis longiclavae* (Mercet), bred from *Diaspis zamiae* on *Strelitzia augusta* and from *Aspidiotus hederae* on *Acacia cyanophylla* at Algiers, from *A. hederae* in Cyprus; *A. diaspidis* (Howard) bred as a parasite of *Diaspis calyptroides* on *Opuntia tomentosa* at Algiers; *A. maculicornis* (Masi) bred from *Parlatoria pergandii* on *Hibiscus* at Algiers].

GÄUMANN, ERNST. Ueber die Bekämpfung des Wurzelbrandes der Zuckerrüben. *Landwirtschaftliches Jahrbuch der Schweiz*, Bern 1928, 42. Jahrg., Heft 5, S. 571-582, Fig. 1.

[*Pythium De Baryanum*].

GIODA, A. Si può vincere il male dell'inchiostro? *Il Coltivatore*, Casale Monferrato, 1928, anno 74, n. 25, pp. 198-203, figg. 15-18.

[Discusses the Gandolfo method of controlling the "ink disease" of the chestnut (*Blepharospora cambivora* Petri)].

GOOSSENS, J. A. A. M. H. Investigations on the "root-rot" of turnip-rooted celeriac (*celeriac*) caused by *Phoma apiicola* Klebahn, and on local strains and synergetic forms of this fungus. *Tijdschrift over Plantenziekten*, Wageningen 1928, 34 jaarg., 11e aflev., blz. 271-316, graphiek 1-4; 12e aflev., blz. 317-348, pl. XVI-XVIII. Literatuurlijst, blz. 345-347.

[In Dutch, with title and summary in English].

GRAHAM, R. J. D. and STEWART, L. B. Injection experiments on trees. *Transactions and Proceedings of the Botanical Society of Edinburgh*, Edinburgh, 1928, Vol. XXX, Pt. I, pp. 19-20.

HAYES, H. K., GRIFFEE, FRED, STEVENSON, F. J. and LUNDEN, A. P. Correlated studies in oats of the inheritance of reaction to stem rust and smuts and of other

differential characters. *Journal of Agricultural Research*, Washington, 1928, Vol.26, No.5, pp.437-457.

[*Puccinia graminis Avenae* Erikss. et Henn., *Ustilago Avenae* (Pers.) Jens., *U. levis* (K et S.) Magn.].

HIRATSUKA, NAOHIDE. Additional notes on the Melampsoraceae of Hokkaido. *The Botanical Magazine*, Tokyo, 1928, Vol.XLII, No.503, pp.503-504.

[Includes Latin diagnosis of *Phakopsora Itōana* Hiratsuka et Tanaka n. sp., on the leaves of *Tiarella polyphylla* Don.].

HODSON, W. E. H. Some notes on the bulb mite. *The Journal of the Ministry of Agriculture*, London, 1928, Vol. XXXV, No.7, pp.656-660.

[*Rhizoglyphus echinopus*].

HORN, WALTHER und SCHENKLING, SIGM. Index Literaturae Entomologicae Serie I: Die Welt-Literatur über die gesamte Entomologie bis inklusive 1863. Er-schienen im Selbstverlag von Dr. Walther HORN, Berlin-Dahlem, Gossler-Str. 18, 1928, Bd.III (Leconte-Schaum), S.705-1056, Taf.3.

HUFF, CLAY G. Nutritional studies on the seed-corn maggot, *Hylemyia cilicrura* Rondani. *Journal of Agricultural Research*, Washington, 1928, Vol.36, No.7, pp.625-630, fig.1.

JOHANN, HELEN, HOLBERT, JAMES R., and DICHSON, JAMES G. A *Pythium* seedling blight and root rot of dent corn. *Journal of Agricultural Research*, Washington, D. C., 1928, Vol.37, No.8, pp.443-464, figs.1-9, pl.1.

[*Pythium arrhenomianes* Drechsler on *Zea indentata*].

KAZANSKIJ, K. A. Bombyx de cèdre (*Dendrolimus sibiricus* Tshtv.) dans les forêts de la République Buriate-Mongole. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 861-915, fig.1-22.

[In Russian, with title also in French].

KNIGHT, HUGH. A micro-technique for observing oil penetration in citrus leaves after spraying. *Science*, Lancaster, Pa., 1928, New Series, Vol.LXVIII, No.1771, p.572.

KONAKOV, N. et ONISIMOV, Z. Notodonta anceps Goeze comme ennemi du chêne au gouvernement de Voronezh. *La Défense des Plantes*, Leningrad, 1928, vol. V, nos 3-4, p.331-334.

[In Russian, with title also in French].

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KUSNEZOV, VICTOR. Deux Cicadellides nuisibles du genre *Erythroneura* Fitch (Homoptères). *La Défense des Plantes*, Leningrad, 1928, vol.V, nos 3-4, p.315-317.

[In Russian, with title also in French. *E. parvula* Boh., *E. heptapotamica* n. sp.].

LEEFMANS, S. Preliminary notes on *Brachartona catoxantha* Hamp. with instructions for combating this pest. *Landbouw, Buitenzorg* 1928, derde jaarg., no. 10, blz. 654-672, pl. 1-6.

[In Dutch, with title and summary also in English].

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[Mycelium of *Plasmopara viticola* in the leaf tissue of *Vitis vinifera*].

LEPLAE, EDM. Le ver rose du coton dans la région du lac Kivu. *Agriculture et Elevage au Congo Belge*, Bruxelles, 1928, 2^{ème} année, n° 10, p. 109-111, 3 fig.

[*Platyedra gossypiella*].

LONG, H. C. Weeds of arable land - IV. *The Journal of the Ministry of Agriculture*, London, 1928, Vol.XXXV, No.4, pp.356-363, figs.1-13.

[*Ranunculus repens* L., *Silene vulgaris* Garche, *Lychnis dioica* L., *L. alba* Mill., *Cerastium vulgatum* L., *Stellaria media* L., *Potentilla anserina* L., *Anthemis arvensis* L., *A. Cotula* L., *Matricaria Chamomilla* L., *M. inodora* L., *Tanacetum vulgare* L.].

IUCIDI, TIZIANO. L'esturmite contro la « *Cnethocampa pityocampa* » (Processionaria del pino). *L'Alpe*, Milano, 1928, anno XV, n. 5, pp. 138-139.
[Negative results].

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MAGROU, J. Etudes sur les galles produites par le « *Bacterium tumefaciens* ». *Annales des Sciences Naturelles*, Dixième Série, Botanique, Paris, 1928, tome X, fasc. 3 et dernier, p. 545-585, fig. I-X, pl. I-VIII. Index bibliographique, p. 581-582.

MARRE, F. Les bouillies salées contre la cochylys et l'eudémis. *Le Cultivateur du Sud-Centre et de la Région Méridionale*, Rodez, 1928, 41^e année, n° 515, p. 481-482.
[*Conchylys ambiguella*, *Polychrosis botrana*].

MARRE, F. Les usages du sel en agriculture. *Le Cultivateur du Sud-Centre et de la Région Méridionale*, Rodez, 1928, 41^e année, n° 511, p. 375.
[Deals in particular with the action of washes containing common salt against *Conchylys ambiguella* and *Polychrosis botrana*].

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NOBLE, R. J. Oat smuts. *The Agricultural Gazette of the New South Wales*, Sydney, 1928, Vol. XXXIX, Pt. 7, pp. 516-518, figs. 1-2.
[*Ustilago Avenae*, *U. levis*].

NOBLE, R. J. Root knot and other eelworm diseases. *The Agricultural Gazette of the New South Wales*, Sydney, 1928, Vol. XXXIX, Pt. 7, pp. 546-550, figs. 2-3.
[*Heterodera radiculola*, *Tylenchus dipsaci*, *T. devastatrix*].

ORIAN, G. Le « Pokkah-bong » de la canne à sucre. *La Revue Agricole de l'île Maurice*, Maurice, 1928, no. 41, p. 208-214, fig. 1-8.
[Disease of origin still unknown].

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[Contains: 1. Les parasites d'*Asphondylia sarothamni* H. Low et d'*A. calycotomae* Kieff.: *Callinome* sp., *Pseudocatalaccus asphondyliae* Masi, *Oxymorpha* (*Tetrastichus*) *intermedia* Thom., *Eurytoma dentata* Mayr. — 2. *Mormoniella* (*Nasonia*) *bre-*

vicornis Ashm. — 3. *Spalangia nigra* Latr. — 4. *Copidosoma thompsoni* Mercet. — 5. *Copidosoma boucheanum* Ratz. — 6. *Microterys ferrugineus* Nees. — 7. *Selonotus* sp. — 8. *Tetrastichus* sp. — 9. *Melittobia acasta* Walk.].

PASSALACQUA, T. La ruggine dell'asparagio. *Curiamo le Pianta! e La Difesa delle Pianta contro le Malattie ed i Parassiti*, Alba, 1928, anno V e XXIII, n. 5, pp. 86-89, 1 fig. [*Puccinia Asparagi*].

PASSALACQUA, T. Vaiolatura fogliare del leccio (*Quercus Ilex*) prodotta dalla *Phyllosticta Quercus-Ilicis* (Sacc.). *Curiamo le Pianta! e La Difesa delle Pianta contro le Malattie ed i Parassiti*, Alba, 1928, anno V e XXIII, n. 5, pp. 91-92, 1 fig.

PETIT, ALBERT. Action de certains sels halogènes sur la spore d'une Ustilaginée, *Tilletia levis*. *Comptes rendus des séances de la Société de Biologie et de ses filiales*, Paris, 1928, tome XCIX, n° 38, p. 2003-2004.

PETRINI, SVEN. A bibliography of recent forest literature in Sweden. *Forestry*, London, 1928, Vol. II, No. 1, pp. 110-125.

[Includes also a list of the works on the protection of forest trees published between 1905 and 1927].

PELLEGLI, LUDWIG. Hederichbekämpfung und Vertilgung. *Wiener Landwirtschaftlichen Zeitung*, Wien 1928, 78. Jahrg., Nr. 50, S. 443. [*Raphanus Raphanistrum*].

POLLOCK, N. A. R. Inkweed eradication. *Queensland Agricultural Journal*, Brisbane, 1928, Vol. XXX, Pt. 6, pp. 583-588, pls. 170-176. [*Phytolacca octandra*].

PUSTOVOIT, A. Contributions à la faune des Orthoptères du district de Pervomajsk, Russie méridionale. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 955-958, 2 fig.

[In Russian, with title also in French].

RACAH, VITTORIO. Osservazioni di Patologia vegetale. *Il Coltivatore*, Casale Monferrato, 1928, anno 74, n. 36, pp. 552-556.

[Reports the presence of an unidentified species of *Cuscuta* on the vine, the damage caused by *Capnodis tenebrionis* to fruit trees, the presence of *Icerya purchasi* on *Buxus* and discusses the acclimatisation of *Aphelinus mali*, all with reference to Tuscany].

RICHTER, HARALD. Die wichtigsten holzbewohnenden Nectrien aus der Gruppe der Krebsreger. *Zeitschrift für Parasitenkunde*, Berlin 1928, 1. Bd., 1. Heft, S. 24-75, Abb. 1-12. Literaturverzeichnis, S. 72-75.

[*Nectria galligena* Bres. (*Cylindrocarpon Mali* [All.] Wr.), *N. galligena* var. *major* Wr. (*Cyl. Mali* var. *flavum* Wr.), *N. ditissima* Tul. (*Cyl. Willkommii* [Lind.] Wr.), *N. ditissima* var. *arctica* Wr. (*Cyl. Willkommii* var. *minus* Wr.), *N. ditissima* var. *major* Wr. (*Cyl. Willkommii* var. *pluriseptatum* Wr.), *N. coccinea* (Pers.) Fr. (*Cyl. candidum* [Link] Wr.), *N. coccinea* var. *sanguinella* (Fries) Wr. (*Cyl. candidum* var. *medium* Wr.), *N. coccinea* var. *longiconia* Wr. (*Cyl. candidum* var. *major* Wr.), *N. coccinea* var. *minor* Wr. (*Cyl. candidum* var. *minus* Wr.), *N. punicea* (Schm.) Fr. (*Cyl. album* [Sacc.] var. *major* Wr.), *N. cucurbitula* (Tode) Fr. (*Cyl. cylindroides* Wr.)].

RODIONOV, Z. Helophorus micans Fald., un ennemi des Graminées. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 951-954, fig. 1-4.

[In Russian, with title also in French].

RODIONOV, Z. Matériaux pour servir à l'étude des ennemis du cotonnier. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 933-951, fig. 1-19.

[In Russian, with title also in French].

ROSEN, H. R. and GROVES, A. B. Studies on fire blight: host range. *Journal of Agricultural Research*, Washington, D. C., 1928, Vol. 37, No. 8, p. 493-505, figs. 1-5. [*Bacillus amylovorus*].

ROTHERS, B. Aperçu sur les maladies des plantes dans la district de Sotshi en Caucase. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 962-967.

[In Russian, with title also in French. Latin diagnoses are given of the following

species new to science: *Phyllosticta grandispora*, on the living leaves of *Quercus sessiliflora*; *Phyll. Allii*, on the living leaves of *Allium Cepa*; *Phyll. Petroselinii*, on the living leaves of *Petroselinum sativum*; *Phyll. Fici-Caricae*, on the living leaves of *Ficus Carica*; *Leptothyrium nervisequium*, on the living leaves of *Ginkgo biloba*].

RUZICKA, JAROSLAV. La pourriture des arbres forestiers. *Věstník Československé Akademie Zemědělské*, Praha 1928, roč. IV, čis. 1, s. 8-9.

[In Czech, with title also in French and German, and text also in German].

SALMON, E. S. and WARE, W. M. The downy mildew of the hop in 1928. *Journal of the Institute of Brewing*, London, 1928, Vol. XXV (Vol. XXVI, New Series), No. 1, pp. 20-25, pl. 1.

[*Pseudoperonospora Humuli* in England].

SCHIEBE, ARNOLD. Praktische Getreiderost-Bekämpfung im Lichte amerikanischer Erfahrungen. *Mitteilungen der Deutschen Landwirtschafts-Gesellschaft*, Berlin 1928, 43. Jahrg., Stück 41, S. 935-937, Abb. 1-5.

[*Puccinia*].

SEARLS, ED. M. A simple method for life-history studies of root-feeding Arthropods. *Journal of Agricultural Research*, Washington, D. C., 1928, Vol. 36, No. 7, pp. 639-645, figs. 1-4.

SHEPHERD, F. F. S. La maladie soupçonnée être le « Pokkah bong ». *La Revue Agricole de l'Île Maurice*, Maurice, 1928, no. 41, p. 207.

[The cause of this sugar cane disease is still unknown].

SHOROCHOV, S. La faune des Scolytiens du gouvernement de Moscou. *La Défense des Plantes*, Leningrad, 1928, vol. IV, n° 6, p. 958-962.

[In Russian, with title also in French].

SIBILIA, CESARE. Cicatrizzazione di ferite in piante di robinia. *L'Alpe*, Milano, 1928, anno XV, n. 9, pp. 323-325, figg. 1-3.

[*Robinia Pseudo-Acacia*].

SIMMONDS, J. H. Flag smut of wheat. *Queensland Agricultural Journal*, Brisbane, 1928, Vol. XXX, Pt. 6, pp. 542-548, pls. 148-151.

[*Urocystis Triticis*].

SMITH, WILLIAM G. Notes on the effect of cutting bracken (*Pteris aquilina* L.). *Transactions and Proceedings of the Botanical Society of Edinburgh*, Edinburgh, 1928, Vol. XXX, Pt. I, pp. 3-12, figs. 1-2.

[Experiments aiming at the control of this troublesome plant].

SORAUER, PAUL. Handbuch der Pflanzenkrankheiten. 2. Bd.: Die pflanzlichen Parasiten. 1. Teil. Fünfte, neubearbeitete Auflage. Unter Mitwirkung von Dr. G. HÖSTERMANN, Dr. E. KÖHLER, Dr. R. LAUBERT, Dr. M. NOACK †, Dr. E. RIEHM, Dr. C. STAPP, Dr. H. W. WOLLENWEBER. Herausgegeben von Dr. O. APPEL. Berlin, Verlagsbuchhandlung Paul Parey, 1928, S. X-758, 195 Textabb.

SOUDEK, STEPÁN. Organisation du régime américain des recherches dans l'Entomologie agricole. *Věstník Československé Akademie Zemědělské*, Praha 1928, roč. IV, čis. 1, s. 34-45, obr. čis. 6-9.

[In Czech, with title also in French].

TAVARES, J. S. Descrição de uma espécie e de um género novo. *Brotéria, Série Zoológica*, Caminha, 1928, vol. XXV, fasc. 1, pag. 5-10, fig. 1-5.

[*Seitneria austriaca* n. g. et n. sp. (Cynipidae), endoparasite of the larva of *Chortophila laricicola* Karl (Anthomiidae), in Austria. The latter is very destructive in the larval state to the seeds of *Larix europaea* DC. There are also recorded as parasites of *Ch. laricicola*, *Asyncryta rufipes* Först. (Ichneumonidae) and an unidentified species of *Braconidae*].

TERÉNYI, ALEXANDER. Laboratoriumsuntersuchungen mit dem "Germisan-Kurz-Beizverfahren". *Fortschritte der Landwirtschaft*, Wien 1928, 3. Jahrg., Heft 21, S. 972-973.

UVAROV, B. P. Locusts and grasshoppers. A handbook for their study and control. London, The Imperial Bureau of Entomology, 1928, XIII+352 pp., 118 figs., 10 pls. Bibliography, pp. 331-346.

[The A. considers the insects described under the common English names of "Locusts" and "Grasshoppers" as belonging to the fam. *Acrididae* and proposes to indicate by the name "Locusts" only those species which definitely possess gregarious habits and wander or migrate in swarms, whereas under the name "Grasshoppers" in the more narrow sense of the word he includes the non-gregarious and non-migrating species.

The book is arranged as follows:

GENERAL PART: Preface. Chapter I. — External Morphology. Chapter II. — Anatomy and Physiology. Chapter III. — Development and Transformations. Chapter IV. — Behaviour. Chapter V. — Ecology and Distribution. Chapter VI. — Natural Enemies. Chapter VII. — Periodicity of Mass Outbreaks. Chapter VIII. — The Technique of Control. Chapter IX. — Organisation of Control.

SPECIAL PART: Chapter X. — The Moroccan Locust (*Dociostaurus maroccanus*, Thunb.) and the Locust Problem in Spain, Anatolia, Transcaucasia, and Turkestan. Chapter XI. — The Migratory Locust (*Locusta migratoria*, L.) and the Locust Problem in Russia and the Tropics of the Old World. Chapter XII. — The Desert Locust (*Schistocerca gregaria*, Forsk.) and the Locust Problem in North and East Africa and in Western Australia. Chapter XIII. — The South American Locust (*Schistocerca paranensis*, Burm.) and the Locust Problem in South and Central America. Chapter XIV. — The Brown Locust (*Locustana pardalina*, Wlk.), the Red Locust (*Nomadacris septemfasciata*, Serv.) and the Locust Problem in South Africa. Chapter XV. — The Italian Locust (*Calliptamus italicus*, L.). Chapter XVI. — Solitary Grasshoppers and the Grasshopper Problem in Siberia and North America: The Siberian Grasshopper (*Gomphocerus sibiricus*, L.). — The Dark-winged Grasshopper (*Chorthippus scalaris*, F. W.). — The Cross-bearing Grasshopper (*Arcyptera microptera*, F. W.). — The Clear-winged Grasshopper (*Camnula pellucida*, Scudd.). — The Flightless Grasshopper (*Podisma pedestris*, L.). — The Lesser Migratory Grasshopper (*Melanoplus mexicanus atlantis*, Riley). — The Red-legged Grasshopper (*Melanoplus femur-rubrum*, De G.). — The Differential Grasshopper (*Melanoplus differentialis*, Uhl.). — The Two-striped Grasshopper (*Melanoplus bivittatus*, Say). — Other Species of Grasshoppers. — The Grasshopper Problem in North America. — The Grasshopper Problem in Russia. Chapter XVII. — The Locust and Grasshopper Problem in Australia: Species of Australian Locusts and Grasshoppers. — The Wandering Grasshopper (*Chortoicetes terminifera*, Walk.). — The Plains Grasshopper (*Austroicetes* spp.). — The Larger Yellow-winged Grasshopper (*Gastrimargus musicus*, F.). — The Smaller Yellow-winged Grasshopper (*Oedaleus australis*, Sauss.). — The Grasshopper and Locust Problem in Australia. Chapter XVIII. — Miscellaneous Grasshoppers and Species that Swarm Occasionally: The Jola Grasshopper (*Colemania sphenarioides*, I. Bol.). — The Spotted Grasshopper (*Aularches miliaris*, L.). — The Elegant and the Variegated Grasshoppers (*Zonocerus elegans*, Thunb., and *Z. variegatus*, L.). — The Larger Rice Grasshoppers (*Hieroglyphus* spp.). — The Smaller Rice Grasshoppers (*Oxya* spp.). — The Tree Locust (*Anacridium moestum*, Serv.). — The Bombay Locust (*Patanga succincta*, L.). — The Javanese Grasshopper (*Valanga nigricornis melanocornis*, Serv.). Chapter XIX. — General Conclusions. — Bibliography. — Index to Species].

VAGLIASINDI, GUSTAVO. Fumigazioni cianidriche in agrumicoltura. *L'Agricoltura d'Italia*, Roma, 1928, anno VII, n. 52, p. 3; 1929, anno VIII, n. 1, p. 3, figg.; n. 2, p. 3. [Against scale insects].

VLADIMIRSKY, NADINE N. Sur la biologie de l'*Epichloë typhina* Tul. *La Défense des Plantes*, Leningrad, 1928, vol. V, nos 3-4, p. 335-347, fig. 1-5, pl. I-II. [In Russian, with title also in French].

VODRÁZKA, OTAKAR. Etude relative à l'anatomie du demi-parasite végétal *Arceuthobium oxycedri* M. B. *Věstník Československé Akademie Zemědělské*, Praha 1928, roč. IV, čís. 2, s. 166-168.

[In Czech, with title also in French, German and English, and text also in German and English].

VORONTZOVSKY, P. Matériaux pour servir à l'étude des oothèques des Acridiodées
La Défense des Plantes, Leningrad, 1928, vol. V, n°s 3-4, p. 319-329, fig. 1-12.
[In Russian, with title also in French].

VOUKASSOVITCH, PAVLÉ. Observations biologiques sur *Rhodites rosae* L. et ses
parasites. *Comptes rendus des séances de la Société de Biologie et de ses filiales*, Paris,
1928, t. XCVIII, n° 13, p. 1148-1150.

[In the neighbourhood of Belgrade the following parasites of *Rhodites rosae* on
Rosa canina have been observed during 1926: *Orthopelma luteator* Grav., *Torymus*
bedequaris Thoms., *Eurytoma rosae*, besides *Perichistus bradthi* Ratzb. thought to be
a commensal of *Rh. rosae*].

WATSON, H. Notes on attack by *Rhizoctonia crocorum* on Sitka spruce (*Picea*
sitchensis). *The Scottish Forestry Journal*, Edinburgh, 1928, Vol. 42, Pt. 2, pp. 58-61.

WHITE, C. T. Weeds of Queensland. Button weed or button mallow (*Modiola*
caroliniana). *Queensland Agricultural Journal*, Brisbane, 1928, Vol. XXX, Pt. 6, pp. 598-
599, pl. 181.

WOLLENWEBER, H. W. Über Fruchtformen der Kriebserregenden Nectriaceen.
Zeitschrift für Parasitenkunde, Berlin 1928, 1. Bd., 1. Heft, S. 138-173, Abb. 1-29.

[Latin diagnoses are given of 1 species and many varieties of *Cylindrocarpon*,
also of 2 varieties of *Nectria*, which are all new to science].

WOODMAN, R. M. A survey of some emulsion problems confronting the sprayer.
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